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APPLICATION OF ECOLOGICAL, GEOLOGICAL
AND OCEANOGRAPHIC ERTS-1 IMAGERY
TO DELAWARE'S COASTAL RESOURCES
PLANNING

Identification of Marsh Vegetation and Coastal
Land-Use in ERTS-1 Imagery

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Identification of Marsh Vegetation and Coastal

Land-Use in ERTS-1 Imagery

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Abstract

Coastal vegetation species appearing in the ERTS-1 images taken of Delaware Bay have been correlated with ground truth vegetation maps, and imagery obtained from RB-57 and U-2 overflights. Multispectral analysis of the high altitude RB-57 and U-2 photographs indicated that four major vegetation communities could be clearly discriminated from 60,000 feet altitude including, 1) salt marsh cord grass (Spartina alterniflora), 2) salt marsh hay and spike grass (Spartina patens) and Distichlis spicata), 3) reed grass (Phragmites communis), and 4) high tide bush and sea myrtle (Iva frutescens and Baccharis halimifolia). In addition, human impact can be detected in the form of fresh water impoundments built to attract water fowl, dredge-fill operations and other alterations of the coastal environment. Overlay maps matching the USGS topographic map size of 1:24,000 have been prepared showing the four wetland vegetation communities, fresh water impoundments and alteration of the wetlands by mosquito control ditching and dredge-fill operations.

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Using these maps for basic ground-truth, ERTS-1 images were examined by human interpreters and automated multi-spectral analyzers. Major plant communities of 1) *Spartina alterniflora*, 2) *Spartina patens* and *Distichlis spicata* and 3) *Iva frutescens* and *Baccharis halimifolia* can be distinguished from each other and from surrounding uplands in ERTS-1 scanner bands #6 and #7. *Phragmites communis* which naturally occurs in small, dispersed patches can be identified only in the heavily disturbed marshes of northern Delaware where it has propagated over large areas. Fresh water impoundments, built to attract water fowl, major dredge-fill construction and other vestiges of human land-use can be identified in ERTS-1 scanner bands #5, #6, and #7. The potential for monitoring such activity from space appears considerable. The ERTS-1 images were taken over Delaware Bay on August 16, and October 10, 1972 (Observations ID. Nos. 1024-15073 and 1079-15133).

